

REMARKS

The final Office Action mailed November 20, 2008, has been received and carefully considered. Claims 1, 9, 10, 16, 19 and 20 have been amended, and claims 8 and 18 have been cancelled. To the best of the undersigned attorney's information and belief, these changes contain no new matter for the reasons given in the remarks which follow.

Entry of this Amendment is respectfully requested since independent claims 1 and 16 have been amended to include the limitations of claims 8 and 18 respectively, which have already been considered, so that no new issues are believed to be raised that would require undue consideration by the Examiner or a further search of the prior art. The dependency of claims 9, 10, 19, and 20 has been changed in view of cancellation of claims 8 and 18, so that these changes do not raise any new issues either.

Claims 1-3, 9-13, 16, 17, and 19-23 are now pending in the Application and are submitted to be in allowable condition. Claims 1 and 16 are independent.

Claim Changes and Support

Claim 1 has been amended to recite, "*wherein the cross-linked membrane is permeable only to the fuel and is a single-layered cross-linked membrane allowing the fuel to permeate in one direction*". Support for these changes is found in claim 8.

Claim 16 has been amended to recite, "*wherein the cross-linked membrane is a single-layered cross-linked membrane allowing the fuel to permeate in one direction*". Support for these changes is found in claim 18.

I. The rejection of claims 1-3 and 8-13 under 35 USC §112, first paragraph, is submitted overcome by the amendments made herein to independent claim 1.

Claims 1-3, 8-13 and 16-23 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

application was filed, had possession of the claimed invention because there is no support in the originally filed specification that the fuel solvent is present in the fuel cell.

Applicants respectfully traverse the Examiner's position.

The Abstract of the present invention recites, *"When the fuel supplying apparatus is applied in a fuel cell, the rate of fuel release is controlled using the polymer to maintain fuel concentration in the fuel tank of the fuel cell"*.

Page 1, lines 21-22 of Applicants' Specification recites, *"operation performance of the direct methanol fuel cell is highly associated with methanol concentration in its fuel tank"*. It is thus clear that the fuel tank being a part of a fuel cell is prior art in the art, which can be concluded that the fuel solvent is also present in the fuel cell.

In view of the foregoing, the description that the fuel solvent is present in the fuel cell is submitted to be fully supported by Applicants' Specification. Applicants' claims 1-3, 8-13, 16-23 are believed to comply with the requirements of 35 U.S.C. 112, first paragraph, contrary to the Examiner's position, so that this rejection should be withdrawn.

II. The rejection of claims 1, 2, and 8 under 35 U.S.C. §102(e) as anticipated by Prasad et al. (US 6,924,054) is respectfully traversed.

III. The rejection of claims 3, 9, and 16-19 under 35 U.S.C. §103(a) as obvious in view of Prasad et al. (hereinafter "Prasad", US 6,924,054) in view of newly applied Choi et al. (hereinafter "Choi", US 5,314,952) is respectfully traversed.

Independent claims 1 and 16 have been amended to recite the invention with greater particularity by incorporating the limitations of claims 8 and 18, respectively.

The Examiner alleges that Prasad has disclosed the technical "a cross-linked membrane for encapsulating the fuel" of the present invention.

However, in Prasad, the reference numeral "26" denotes a waste storage area 26 for storing a waste-absorbing material, which does not have the characteristic of the cross-linked membrane of the fuel supplying apparatus of the present invention that is only permeable to the

fuel encapsulated therein. Further, it is impossible for the waste storage area 26 to control the releasing rate of the fuel into the fuel tank via the diffusion effect.

Prasad discloses a fuel supply 20 that includes a fuel storage area 24 and a waste storage area 26. The waste storage area 26 absorbs the waste material generated due to the continuous operation of the fuel supply 20. The fuel solution of the fuel storage area 24 includes a borohydride fuel solution, a methanol solution, an ethanol solution, mixtures of these or other alcohols, or liquid hydrocarbons such as gasoline pentane, kerosene or diesel (referring to FIGS. 2-4 and column 3, lines 1-67 of the specification of Prasad). The waste-absorbing material includes cross-linked polyacrylic acid salts, polyvinyl alcohol, poly(2-hydroxyethyl methacrylate)/poly(ethylene oxide), isobutylene-maleic acid copolymer derivatives, poly(methacrylic acid) salts, poly(acrylamide), polyvinylpyrrolidone, and other absorbent materials, such as cellulose sponge materials and standard foams (referring to column 6, lines 13-30 of the specification of Prasad).

In contrast, the present invention discloses a fuel supply apparatus for a fuel cell. A cross-linked membrane is used in the fuel supply apparatus to encapsulate the fuel and the cross-linked membrane is only permeable to the fuel from a fuel solvent in a fuel tank and includes polyvinyl acetate, oligomers and copolymers of vinyl pyrrolidone, and polytetrafluoroethylene. With the use of the cross-linked membrane as a fuel controlling membrane, the fuel can be released to the fuel tank via diffusion in an appropriate rate, so as to maintain the fuel concentration in the trough within a certain range.

In other words, the cross-linked membrane of the fuel supply apparatus of the present invention serves as a one-way gate, such that the fuel is released into the fuel tank in an appropriate rate, while the waste-absorbing material of Prasad absorbs fuel solutions and waste solutions. Therefore, the waste storage area 26 of Prasad has different material and effect from the fuel supply apparatus of the present invention. Hence, the amended claims 1 and 16 are not anticipated by Prasad.

The Examiner further alleges that Choi has disclosed that the fuel supply apparatus is composed of a fuel and a cross-linked membrane encapsulated the fuel and that the fuel supply apparatus has a gel-like structure. Choi discloses using an alkali metal acrylate and an alkali

metal hydroxide solution to form a polymer and that the polymer is crosslinked by a crosslinking agent so as to improve water absorption rate and gel-strength (column 5, line 30 to column 6, line 13 of the specification). However, the fuel supply apparatus is composed of a fuel and a cross-linked membrane for encapsulating the fuel and has a gel-like structure in the present invention.

Choi further discloses washing the obtained polymer with methanol to remove residual monomers, and passing the polymer through a 50-mesh wire gauze to obtain the water absorptive resin having a uniform size (referring to column 6, lines 14-48 of the specification). In other words, Choi does not disclose the cross-linked membrane that encapsulates a fuel and is only permeable to the fuel and allows the fuel to permeate in one direction.

Therefore, Choi does not remedy the deficiencies of Prasad as compared with the present invention, and thus the present invention is patentable over Prasad and Choi.

It is believed that independent claims 1 and 16 and dependent claims 2-3, 9-13, 17 and 19-23 are in condition for allowance.

CONCLUSION


In view of the foregoing amendments and remarks, Applicants submit that claims 1-3, 9-13, 16, 17, and 19-23 and the Application are in condition for allowance. Reconsideration and passage of this case to issue are therefore requested.

Should the Examiner consider that a conference would help to expedite the prosecution of this Application, the Examiner is invited to contact the undersigned to arrange for such an interview.

No fee is believed due. Should any fee be deemed due, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002 and is requested to advise us accordingly.

Respectfully submitted,

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Date



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